German wireless telegraph station at Nauen, the law is deduced that wind velocities at different heights vary as the fifth-roots of the heights. At 512 meters the velocity is twice that at 16 meters. The diurnal variation of wind velocity at the surface with a maximum in the afternoon extends in winter only to a height of about 60 meters above the ground. Above that height the opposite type of variation is found, with a maximum in the night. The neutral zone between the two types is considerably higher in the Summer, probably at about 300 meters.—*R. C[orless.]*

551.55(048)

THE RELATION BETWEEN PRESSURE-GRADIENT, WIND, AND FRICTION IN STEADY MOTION.[1]

By F. ÅKERBLOM.

[*Reprinted from* Science Abstracts, Sect. A, Aug. 30, 1917, §731.]

On the assumption that motion of the air near the earth's surface could be treated like the steady motion of a particle, Guldberg and Mohn developed simple equations connecting wind velocity with horizontal pressure gradient, latitude, air density, and friction. In forming the equations it was assumed that friction acted in a direction opposed to that of the surface wind. Comparison with observations, however, showed that the equations were inapplicable to surface winds in the interior of continents, that coastal winds conformed more nearly with them, while observations at a single station at sea gave satisfactory agreement with them.

The author introduced the conception of friction acting in a direction different from that of the surface wind reversed, on the ground that the upper wind, which affects the surface wind by friction as well as the ground, usually differs in direction from that wind. Comparison with observations in Europe, America, and over the North Atlantic gives values of the angle between the direction of friction and the reversed direction of the surface wind which vary from 30° to 60° and are slightly greater over sea than over land. Over land the angle appears to show a maximum in the early afternoon and a minimum at night.—*R. C[orless.]*

551.576(048)

THE FORMATION OF ANTICYCLONIC STRATUS.[2]

By C. K. M. DOUGLAS.

[*Reprinted from* Science Abstracts, Sect. A, Aug. 30, 1917, §727.]

The clouds here termed stratus, which include those of the stratus-cumulus type, are found, by observation from an aeroplane, to have an adiabatic temperature gradient below them and a reversed gradient above them. Within the cloud the gradient is usually adiabatic, and there is considerable turbulence. On the north and east sides of anticyclones there is nearly always a layer of stratus or of haze with cloud patches. The height of the layer varies between 3,000 and 6,000 feet. It is pointed out that stratus may be formed by the adiabatic compression of nonhomogeneous cloudy air, the layers of cloud where there is initially most free water present becoming less warmed than the layers above and below after the water has evaporated from these, and so giving rise to the reversed gradient above the remaining layer of cloud. A reversed gradient may also be formed at any layer above which there is a pronounced increase of westerly wind, this westerly current being normally warm and tending to raise the temperature at its level. By the use of a formula put forward by Napier Shaw it is demonstrated that this is particularly likely to happen on the northern sides of anticyclones at any height where there is initially a smaller vertical temperature gradient than normal, the tendency being for this abnormality to become accentuated.—*J. S. Di[nes.]*

[1] Ark. för Mat., astron., och fysik, Stockholm, 1916, 11, No. 18. 19 p.
[2] Proc., Roy. Soc., Edinburgh, 1916-17, 37:137-148.

WINDWARD ISLANDS VS. LEEWARD ISLANDS.

The Washington office of the United States Weather Bureau recently received a query from our observer at Basseterre, St. Christopher, British West Indies, concerning the exact scope of the terms Windward Islands and Leeward Islands when used in the cabled storm warnings of this bureau. As the Weather Bureau is now

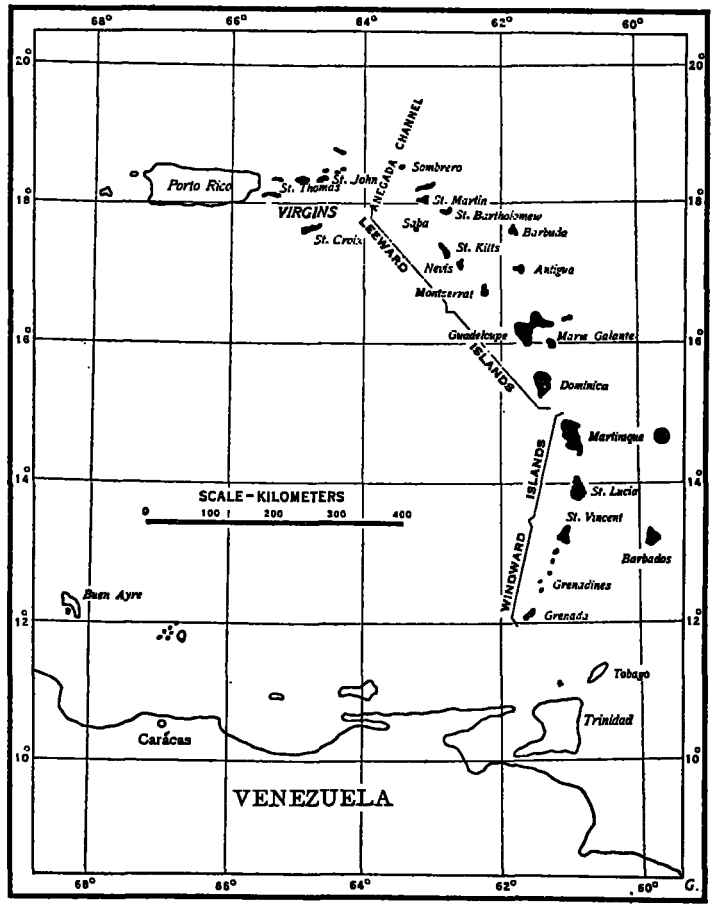

FIGURE 1.—Sketch map outlining the Windward and the Leeward Islands as now defined.

engaged in extending its network among the islands of the West Indies, and probably will soon begin to make numerous references to the islands, this question is one of considerable immediate interest. In view of the somewhat confusing usage in existing atlases it seemed desirable to submit the question to the United States Geographic Board for a statement as to the preferred usage, the following was received in reply:

UNITED STATES GEOGRAPHIC BOARD,
Washington, D. C., Oct. 16, 1917.

Prof. CHARLES F. MARVIN,
Chief of Weather Bureau.

DEAR SIR: In reply to your inquiry of 9th inst., I have to say that considerable confusion has existed as to the application of the names "Windward Islands" and "Leeward Islands." Originally the name

"Lesser Antilles" was applied to the whole chain of islands from Porto Rico to Trinidad, the latter island sometimes being included, and by some geographers excluded.

Later the Lesser Antilles were divided into two groups, the Leeward Islands extending from Porto Rico to and including Dominica Island, and the Windward Islands taking in the remainder of the chain.

The later usage has been to exclude Virgin Islands and Danish West Indies and apply the name Leeward Islands to the group from Anegada Channel to and including Dominica Island, and the name Windward Islands to the remainder of the chain, including Barbados, but excluding Trinidad and Tobago.

This later usage seems to have been generally adopted by the best authorities.

Yours, respectfully, ANDREW BRAID, *Chairman.*

The West Indies are shown in some detail on Charts VIII and IX of the MONTHLY WEATHER REVIEW, June, 1898, and later; also on Chart X of the issue for December, 1916. None of these, however, bring out just the boundaries mentioned. The little sketch map presented by figure 1, therefore, is lettered to bring out what the Weather Bureau forecasters now understand to be the usage preferred by the United States Geographic Board, and also to illustrate the manner in which the two names will be applied hereafter by this bureau, viz:

Leeward Islands: From Anegada Channel to and including Dominica.

Windward Islands: Remainder of the chain, including Barbados, but excluding Trinidad and Tobago.—C. A., jr.

CANADIAN ASTRONOMICAL APPOINTMENTS.[1]

At the time of his death in April, 1916, Dr. W. F. King was Chief Astronomer of Canada, director of the Dominion Observatory at Ottawa, Boundary Commissioner, and director of the Canadian Geodetic Survey. He had developed these positions about himself and it was recognized that no single person could well succeed him in all of them. The work has been adjusted as follows: First, Mr. J. J. McArthur was appointed Boundary Commissioner, then Dr. J. S. Plaskett was made director of the new Dominion Astro-physical Observatory at Victoria, B. C.; third, Mr. Noel J. Ogilvie has been appointed superintendent of the Geodetic Survey; and just now (October, 1917) Dr. Otto [Julius] Klotz has been appointed Chief Astronomer and director of the Dominion Observatory. Dr. Klotz is a native of Preston, Ontario, (b. 1852); entered the service of the Dominion Government in 1879; was associated with Dr. King in the founding of the observatory; has been Assistant Chief Astronomer there since 1908, and acting director since April, 1916.

While joining the editor of the Journal in his good wishes for all these appointees, it is with particular pleasure that we here record the fact that Dr. Klotz was urged for his new position in a wholly voluntary petition signed by all the other members of the force at the Dominion Observatory. Dr. Klotz has always shown much interest in the meteorology, climatology, and seismology of North America and of the United States, and it may reasonably be expected that in the future various contributions from him will appear in these pages, in addition to the regular monthly seismological reports now being published.—C. A., jr.

[1] *From* Journal, Royal Astronomical Society of Canada, Toronto, October, 1917, 11:358.